

[JP,2688916,B]

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CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE  
INVENTION TECHNICAL PROBLEM EXAMPLE DESCRIPTION OF DRAWINGS  
DRAWINGS

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**CLAIMS**

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(57) [Claim(s)]

[Claim 1] The main frame of a Uichi Hidari pair which goes caudad and is prolonged the back from a steering shaft tube is prepared. While fabricating each of this main frame on an outside plate in made from the sheet metal which meets mutually by the cross direction The rear arm bracket which goes caudad and is prolonged from the back end of each of this main frame is prepared. In the car-body frame of the motor bicycle which made the body of a bracket of this rear arm bracket that supports a rear arm pivotably directly the product made from casting, and connected the bodies of a bracket of a right-and-left rear arm bracket by the cross tube The car-body frame of the motor bicycle which extended the plate outside the main frame formed from the bracket plate made from a sheet metal to the part by the side of the cross direction external surface of each above-mentioned rear arm bracket located in the upper part at least.

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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

#### (Field of the Invention)

While this invention makes a main frame in more detail the product made from a sheet metal about the car-body frame of a motor bicycle, it relates to what made the body of a bracket of the rear arm bracket which supports a rear arm pivotably directly the product made from casting.

#### (Prior art)

There are some which are shown by JP,60-113787,A in the above car-body frames. According to this configuration, the car-body frame has the main frame of a Uichi Hidari pair which goes caudad and is prolonged the back from a steering shaft tube, and let each of this main frame be a product made from a sheet metal. Moreover, it went caudad from the back end of each above-mentioned main frame, and the rear arm bracket is prolonged. Let the body of a bracket which constitutes the cross direction external surface side of this rear arm bracket be a rigid high product made from casting on the relation which supports the large rear arm of a load pivotably directly. Moreover, the inside side of a rear arm bracket same as the above consists of bracket plates made from a sheet metal. Furthermore, the bodies of a bracket of a right-and-left rear arm bracket are connected by the cross tube.

#### (Trouble which invention tends to solve)

By the way, in order to make the car body of a motor bicycle produce a sporty appearance, it is desirable to make it uniform as the exterior of a main frame and the rear arm bracket can be carried out, and to give a continuity among these both. However, conventionally [ above-mentioned ], with a configuration, since the quality of the materials differ, a main frame and the rear arm bracket of each other are clearly made for these both exterior distinction. Therefore, this is not desirable if it carries out as [ described / above ] from a viewpoint which is going to make a car body produce a sporty appearance.

Moreover, conventionally [ above-mentioned ], with a configuration, since the body of a bracket of each rear arm bracket is located in a cross direction external surface side, respectively, if this compares with being located in an inside side, the clearance of the body of both [ these ] brackets will become long. Therefore, there is un-arranging

[ that the die length of the cross tube with which the part and the bodies of these right-and-left bracket are made to connect becomes long, and a body weight also becomes heavy in connection with this ].

(The purpose of invention)

This invention was made paying attention to the above situations, and it aims at making a car body light while it aims at improvement in appearance, as it makes the car body of a motor bicycle produce a sporty appearance.

(Configuration of invention)

The place by which it is characterized [ of this invention for attaining the above-mentioned purpose ] makes the body of a bracket of a rear arm bracket the product made from casting, and is in the point of having extended the plate outside the main frame formed from bracket BURETO made from a sheet metal to the part by the side of the cross direction external surface of a rear arm bracket same as the above located in the upper part at least.

(Work for )

The operation by the above-mentioned configuration is as following.

Both a plate 37 and the bracket plate 55 of the rear arm bracket 39 formed of extension of the outside [ this ] plate 37 are the products made from a sheet metal outside a main frame 35, for this reason, a main frame 35 and the rear arm bracket 39 can be set to Mr. exterior 1, and a continuity can be given to these both.

Moreover, if the bracket plate 55 made from a sheet metal is located in the external surface side and each rear arm bracket 39 is put in another way, the body 40 of a bracket will be located in an inside side. Therefore, since the clearance of the body 40 of a right-and-left bracket and 40 comrades becomes short, it can shorten the part and the cross tubes 44 and 45 which connect these, and can make weight of a car body light.

(Example)

Hereafter, a drawing explains the example of this invention.

In Fig. 2 , 1 is a motor bicycle, and 2 is that car-body frame, and let this car-body frame 2 be a diamond frame. Bearing of the steering of a front fork 3 is made free to the front end of this car-body frame 2, and this front fork 3 supports a front wheel 4 to that lower limit, and is supporting the handle 5 to upper limit.

The rear arm 8 is supported pivotably by the back end of the above-mentioned car-body frame 2 free [ vertical rocking ] with the pivotable support shaft 7, and this rear arm 8 is supporting the rear wheel 9 at that rocking edge. Moreover, between the posterior part of the above-mentioned car-body frame 2, and the rear arm 8, the

shock absorber 10 intervenes through a link mechanism 11, and this shock absorber 10 buffers the impact which is going to be transmitted from the transit road surface 13 through a rear wheel 9 or the rear arm 8 toward the above-mentioned car-body frame 2 side.

15 is an engine and this is the engine of a four-cycle 4-cylinder. This engine 15 is supported by the above-mentioned car-body frame 2 with the conclusion bolt 16. A carburetor 17 is connected with the suction port of this engine 15, and the air cleaner 18 is connected with this carburetor 17. Moreover, 19 is a fuel tank and this fuel tank 19 and the above-mentioned air cleaner 18 are covered in one with the covering object 20. 21 is a canister.

The front end of the anterior part exhaust pipe 23 was connected with the exhaust air port of each gas column in the above-mentioned engine 15, respectively, and the back end of each of this anterior part exhaust pipe 23 is back prolonged through the lower part of an engine 15. Moreover, the back end of each [ these ] anterior part exhaust pipe 23 is gathered by the manifold 24, and the interior of this manifold 24 serves as an expansion chamber. Furthermore, the posterior part exhaust pipe 25 is prolonged toward the after [ slant ] upper part from this manifold 24, and the muffler 26 is connected with the back end of this posterior part exhaust pipe 25. In this case, the posterior part exhaust pipe 25 and the muffler 26 are located in the right-hand side of a rear wheel 9.

While resulting [ from the back end of the above-mentioned anterior part exhaust pipe 23 ] in a manifold 24, the exhaust air control unit 27 intervenes. This exhaust air control device 27 adjusts the opening of a flueway from the above-mentioned anterior part exhaust pipe 23 to a manifold 24 according to the rotational speed of an engine 15, and he is trying to raise the charging efficiency of an engine 15, using an exhaust-gas-pressure wave effectively.

The drive chain wheel 29 is established in the above-mentioned engine 15, on the other hand, the follower chain wheel 30 is established in a rear wheel 9, and the transmission chain 31 is almost wound around both [ these ] the chain wheels 29 and 30. In addition, 32 is a sheet.

If a fuel is supplied to the above-mentioned carburetor 17 from the above-mentioned fuel tank 19 and the open air is inhaled by the engine 15 through an air cleaner 18 and this carburetor 17, actuation of this engine 15 will be attained. And if the power is made to transmit to a rear wheel 9 through transmission chain 31 grade, it can be made to run a motor bicycle 1.

In Fig. 9 , said car-body frame 2 has the steering shaft tube 34 which supports said

front form 3 to the front end from Fig. 1. Moreover, it went caudad the back from this steering shaft tube 34, and the main frames 35 and 35 of a Uichi Hidari pair are prolonged. Each of this main frame 35 is fabricated by the cross direction with the outside plates 36 and 37 in made from the sheet metal which meets mutually. In this case, as shown especially in Fig. 5, both [ these ] the plates 36 and 37 of both make cross-section horseshoe-shaped, and each other are welded, and this main frame 35 serves as a box section.

It went caudad from the back end of each above-mentioned main frame 35, and the rear arm bracket 39 is prolonged. The cavernous section is formed between wall 40a and outer wall 40b to which it is, and each of that body 40 of a bracket is the product made from casting of an aluminum containing alloy, and meets the cross direction of this body 40 of a bracket for this rear arm bracket 39 to support said rear arm 8, that is, this body 40 of a bracket serves as a hollow casting.

The hollows 42 and 43 of a vertical pair are formed in the inside of each above-mentioned body 40 of a bracket, among those each edge of the up cross tube 44 is inserted and welded to the up hollow 42, and each edge of the lower cross tube 45 is inserted and welded to the lower hollow 43. That is, both these cross tubes 44 and 45 have connected firmly the bodies 40 and 40 of a right-and-left bracket. In this case, both the above-mentioned cross tubes 44 and 45 of both are the products made from casting of an aluminium alloy. And ranging over that wall 40a and outer wall 40b, the pivotable support hole 46 is formed in the above-mentioned upper part, the lower cross tube 44, and each body 40 of a bracket between 45, respectively, and bearing of said pivotable support shaft 7 which supports the rear arm 8 pivotably in this pivotable support hole 46 is carried out.

In Fig. 3 from Fig. 1, said shock absorber 10 consists of an elastic cylinder-like damper 48 and a spring 49 energized in the direction which expands this damper 48, and the upper limit of a damper 48 is supported pivotably by the up cross tube 44 by the 1st pivotable support pin 50.

On the other hand, said link mechanism 11 has the main link 52 supported pivotably by the above-mentioned lower cross tube 45 free [ vertical rotation ], the connecting linkages 53 and 53 of a Uichi Hidari pair which connect the halfway section and said rear arm 8 of this main link 52 are formed, and the lower limit of the above-mentioned damper 48 is supported pivotably by the rotation edge of the main link 52 same as the above.

A deer is carried out, and in case the rear arm 8 carries out [ a rear wheel 9 ] upper part rotation in response to the transit road surface 13 to an impact during transit of

a motor bicycle 1, this link mechanism 11 increases the amount of contraction of a damper 48 to a non-line type according to this rear arm 8 carrying out upper part rotation, and, thereby, raises the flattery nature of a rear wheel 9 to the transit road surface 13.

Fig. 8 explains in more detail about the above-mentioned rear arm bracket 39 from Fig. 1.

The level difference side 54 is formed in the upper limit of wall 40a of said body 40 of a bracket, and inner plate 36 lower limit of a main frame 35 is welded to this level difference side 54. On the other hand, the plate 37 is made to extend outside the main frame 35 formed with the bracket plate 55 made from a sheet metal to the part located in the upper part by the side of the cross direction external surface of each rear arm bracket 39, and the lower limit of the above-mentioned bracket plate 55 is welded to the level difference side 56 fabricated by the upper limit of \*\* 40b outside the above-mentioned body 40 of a bracket.

In order that the body 40 of a bracket may receive the load from the rear arm 8 side directly in the above-mentioned case, although the weight of this body 40 of a bracket is heavy as described above, it has considered as the rigid high product made from casting. Lightweight-ization of the rear arm bracket 39 is attained by the comparatively light bracket plate 55 made from a sheet metal constituting, as the part which is not a direct receptacle, on the other hand, described above the load from the rear arm 8 side in the rear arm bracket 39, namely, using such a bracket plate 55. since [ and ] the bracket plate 55 is formed by extending the outside plate 37 as described above -- a main frame 35 and the rear arm bracket 39 -- an exterior -- it is uniform.

And since each above-mentioned body 40 of a bracket is located in the inside side of the rear arm bracket 39, respectively, the clearance of the body 40 of a right-and-left bracket and 40 comrades becomes short. Therefore, the part and each above-mentioned cross tubes 44 and 45 which connect these are shortened, and it is made for the weight of a car body to become light.

Furthermore, since the inner plate 36, the joint of wall 40a, and the outside plate 37 and the joint of outer wall 40b are made to bias up and down, though each [ these ] joint has a strong fall according to the above-mentioned configuration, it is prevented that the fall of this reinforcement concentrates on one place.

In Fig. 1 and Figs. 2, 8, and 9, said lower cross tube 45 is bent so that it may become right going up gradually, the right end of this lower cross tube 45 is located more nearly up than that left end, and the lower limit of the right-hand side rear arm bracket

39 is short formed in connection with this. And it is a lower part at the right end of this lower cross tube 45, and said posterior part exhaust pipe 25 is located near [ as possible ] said link mechanism 11. That is, even when this posterior part exhaust pipe 25 is formed in the right-hand side of a car body, it is made for the right-and-left angle of bank of a motor bicycle 1 to have become as equal as possible.

Moreover, since the link mechanism 11 is located in the center of the cross direction in the above-mentioned case, even if it lowers the main link 52 to some extent, the angle of bank is not restricted. Then, while lengthening the cushioning stroke of a shock absorber 10 by lowering the location of this main link 52 as much as possible, low center-of-gravity-ization of a car body is attained.

Furthermore, the right end inferior surface of tongue 58 of the above-mentioned lower cross tube 45 is made into the inclined plane after post-so that it may agree with the inclination of said posterior part exhaust pipe 25, and the left end top face 59 of the lower cross tube 45 same as the above is made into the inclined plane which falls the back so that it may agree in the inclination when bending as said transmission chain 31 shows by the imaginary line in the 1st Fig. That is, this lower cross tube 45 is rationally fabricated so that useless space may not be generated between the posterior part exhaust pipe 25, the transmission chain 31, and the lower cross tube 45.

In Figs. 4 and 10, the sheet bracket 61 is really fabricated by the upper limit of wall 40a of each of said body 40 of a bracket from Fig. 2. Each sheet bracket 61 is projected toward the method of Gokami, the front end of the seat rail 62 which supports said sheet 32 \*\*\*\*s it in the protrusion edge of this sheet bracket 61, and the stop is carried out to it. Moreover, reinforcing materials 63 are constructed over the base of the sheet bracket 61 same as the above, and the posterior part of the sheet rate 62, and the seat rail 62 is firmly supported with this sheet bracket 61.

Moreover, the protrusion edges of the right-and-left sheet bracket 61 are connected by the cross member 64, and the posterior part of said fuel tank 19 and the covering object 20 is supported through the shock absorbing material 65 of elasticity on this cross member 64.

Fig. 11 shows other examples. According to drawing, all the external surface sides of the rear arm bracket 39 are fabricated with the bracket plate 55 made from a sheet metal. Other configurations are the same as that of said example.

#### (Effect of the invention)

Since the plate was extended outside the main frame formed from the bracket plate made from a sheet metal to the part by the side of the external surface of a rear arm bracket located in the upper part at least according to this invention, suppose that it

is uniform as you can carry out the exterior of a main frame and the rear arm bracket. That is, a continuity can be given among these both, the car body of a motor bicycle can be made to produce a sporty appearance, and, therefore, improvement in appearance is attained.

Moreover, as a result depended on having prepared the bracket plate in the external surface side of each rear arm bracket, since the body of a bracket is located in an inside side, the cross tube which connects the body of a right-and-left bracket can be shortened, and, therefore, weight of a car body can be made light.

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## TECHNICAL FIELD

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### (Field of the Invention)

While this invention makes a main frame in more detail the product made from a sheet metal about the car-body frame of a motor bicycle, it relates to what made the body of a bracket of the rear arm bracket which supports a rear arm pivotably directly the product made from casting.

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## PRIOR ART

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(Prior art)

There are some which are shown by JP,60-113787,A in the above car-body frames. According to this configuration, the car-body frame has the main frame of a Uichi Hidari pair which goes caudad and is prolonged the back from a steering shaft tube, and let each of this main frame be a product made from a sheet metal. Moreover, it went caudad from the back end of each above-mentioned main frame, and the rear arm bracket is prolonged. Let the body of a bracket which constitutes the cross direction external surface side of this rear arm bracket be a rigid high product made from casting on the relation which supports the large rear arm of a load pivotably directly. Moreover, the inside side of a rear arm bracket same as the above consists of bracket plates made from a sheet metal. Furthermore, the bodies of a bracket of a right-and-left rear arm bracket are connected by the cross tube.

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## EFFECT OF THE INVENTION

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### (Effect of the invention)

Since the plate was extended outside the main frame formed from the bracket plate made from a sheet metal to the part by the side of the external surface of a rear arm bracket located in the upper part at least according to this invention, suppose that it is uniform as you can carry out the exterior of a main frame and the rear arm bracket. That is, a continuity can be given among these both, the car body of a motor bicycle can be made to produce a sporty appearance, and, therefore, improvement in appearance is attained.

Moreover, as a result depended on having prepared the bracket plate in the external surface side of each rear arm bracket, since the body of a bracket is located in an inside side, the cross tube which connects the body of a right-and-left bracket can be shortened, and, therefore, weight of a car body can be made light.

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## TECHNICAL PROBLEM

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(Trouble which invention tends to solve)

By the way, in order to make the car body of a motor bicycle produce a sporty appearance, it is desirable to make it uniform as the exterior of a main frame and the rear arm bracket can be carried out, and to give a continuity among these both. However, conventionally [ above-mentioned ], with a configuration, since the quality of the materials differ, a main frame and the rear arm bracket of each other are clearly made for these both exterior distinction. Therefore, this is not desirable if it carries out as [ described / above ] from a viewpoint which is going to make a car body produce a sporty appearance.

Moreover, conventionally [ above-mentioned ], with a configuration, since the body of a bracket of each rear arm bracket is located in a cross direction external surface side, respectively, if this compares with being located in an inside side, the clearance of the body of both [ these ] brackets will become long. Therefore, there is un-arranging [ that the die length of the cross tube with which the part and the bodies of these right-and-left bracket are made to connect becomes long, and a body weight also becomes heavy in connection with this ].

(The purpose of invention)

This invention was made paying attention to the above situations, and it aims at making a car body light while it aims at improvement in appearance, as it makes the car body of a motor bicycle produce a sporty appearance.

(Configuration of invention)

The place by which it is characterized [ of this invention for attaining the above-mentioned purpose ] makes the body of a bracket of a rear arm bracket the product made from casting, and is in the point of having extended the plate outside the main frame formed from bracket BURETO made from a sheet metal to the part by the side of the cross direction external surface of a rear arm bracket same as the above located in the upper part at least.

(Work for )

The operation by the above-mentioned configuration is as following.

Both a plate 37 and the bracket plate 55 of the rear arm bracket 39 formed of extension of the outside [ this ] plate 37 are the products made from a sheet metal outside a main frame 35, for this reason, a main frame 35 and the rear arm bracket 39

can be set to Mr. exterior 1, and a continuity can be given to these both. Moreover, if the bracket plate 55 made from a sheet metal is located in the external surface side and each rear arm bracket 39 is put in another way, the body 40 of a bracket will be located in an inside side. Therefore, since the clearance of the body 40 of a right-and-left bracket and 40 comrades becomes short, it can shorten the part and the cross tubes 44 and 45 which connect these, and can make weight of a car body light.

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## EXAMPLE

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### (Example)

Hereafter, a drawing explains the example of this invention.

In Fig. 2 , 1 is a motor bicycle, and 2 is that car-body frame, and let this car-body frame 2 be a diamond frame. Bearing of the steering of a front fork 3 is made free to the front end of this car-body frame 2, and this front fork 3 supports a front wheel 4 to that lower limit, and is supporting the handle 5 to upper limit.

The rear arm 8 is supported pivotably by the back end of the above-mentioned car-body frame 2 free [ vertical rocking ] with the pivotable support shaft 7, and this rear arm 8 is supporting the rear wheel 9 at that rocking edge. Moreover, between the posterior part of the above-mentioned car-body frame 2, and the rear arm 8, the shock absorber 10 intervenes through a link mechanism 11, and this shock absorber 10 buffers the impact which is going to be transmitted from the transit road surface 13 through a rear wheel 9 or the rear arm 8 toward the above-mentioned car-body frame 2 side.

15 is an engine and this is the engine of a four-cycle 4-cylinder. This engine 15 is supported by the above-mentioned car-body frame 2 with the conclusion bolt 16. A carburetor 17 is connected with the suction port of this engine 15, and the air cleaner 18 is connected with this carburetor 17. Moreover, 19 is a fuel tank and this fuel tank 19 and the above-mentioned air cleaner 18 are covered in one with the covering object 20. 21 is a canister.

The front end of the anterior part exhaust pipe 23 was connected with the exhaust air port of each gas column in the above-mentioned engine 15, respectively, and the back end of each of this anterior part exhaust pipe 23 is back prolonged through the lower part of an engine 15. Moreover, the back end of each [ these ] anterior part exhaust pipe 23 is gathered by the manifold 24, and the interior of this manifold 24 serves as an expansion chamber. Furthermore, the posterior part exhaust pipe 25 is prolonged toward the after [ slant ] upper part from this manifold 24, and the muffler 26 is connected with the back end of this posterior part exhaust pipe 25. In this case, the posterior part exhaust pipe 25 and the muffler 26 are located in the right-hand side of a rear wheel 9.

While resulting [ from the back end of the above-mentioned anterior part exhaust pipe 23 ] in a manifold 24, the exhaust air control unit 27 intervenes. This exhaust air

control device 27 adjusts the opening of a flueway from the above-mentioned anterior part exhaust pipe 23 to a manifold 24 according to the rotational speed of an engine 15, and he is trying to raise the charging efficiency of an engine 15, using an exhaust-gas-pressure wave effectively.

The drive chain wheel 29 is established in the above-mentioned engine 15, on the other hand, the follower chain wheel 30 is established in a rear wheel 9, and the transmission chain 31 is almost wound around both [ these ] the chain wheels 29 and 30. In addition, 32 is a sheet.

If a fuel is supplied to the above-mentioned carburetor 17 from the above-mentioned fuel tank 19 and the open air is inhaled by the engine 15 through an air cleaner 18 and this carburetor 17, actuation of this engine 15 will be attained. And if the power is made to transmit to a rear wheel 9 through transmission chain 31 grade, it can be made to run a motor bicycle 1.

In Fig. 9 , said car-body frame 2 has the steering shaft tube 34 which supports said front form 3 to the front end from Fig. 1 . Moreover, it went caudad the back from this steering shaft tube 34, and the main frames 35 and 35 of a Uichi Hidari pair are prolonged. Each of this main frame 35 is fabricated by the cross direction with the outside plates 36 and 37 in made from the sheet metal which meets mutually. In this case, as shown especially in Fig. 5 , both [ these ] the plates 36 and 37 of both make cross-section horseshoe-shaped, and each other are welded, and this main frame 35 serves as a box section.

It went caudad from the back end of each above-mentioned main frame 35, and the rear arm bracket 39 is prolonged. The cavernous section is formed between wall 40a and outer wall 40b to which it is, and each of that body 40 of a bracket is the product made from casting of an aluminum containing alloy, and meets the cross direction of this body 40 of a bracket for this rear arm bracket 39 to support said rear arm 8, that is, this body 40 of a bracket serves as a hollow casting.

The hollows 42 and 43 of a vertical pair are formed in the inside of each above-mentioned body 40 of a bracket, among those each edge of the up cross tube 44 is inserted and welded to the up hollow 42, and each edge of the lower cross tube 45 is inserted and welded to the lower hollow 43. That is, both these cross tubes 44 and 45 have connected firmly the bodies 40 and 40 of a right-and-left bracket. In this case, both the above-mentioned cross tubes 44 and 45 of both are the products made from casting of an aluminium alloy. And ranging over that wall 40a and outer wall 40b, the pivotable support hole 46 is formed in the above-mentioned upper part, the lower cross tube 44, and each body 40 of a bracket between 45, respectively, and bearing of

said pivotable support shaft 7 which supports the rear arm 8 pivotably in this pivotable support hole 46 is carried out.

In Fig. 3 from Fig. 1, said shock absorber 10 consists of an elastic cylinder-like damper 48 and a spring 49 energized in the direction which expands this damper 48, and the upper limit of a damper 48 is supported pivotably by the up cross tube 44 by the 1st pivotable support pin 50.

On the other hand, said link mechanism 11 has the main link 52 supported pivotably by the above-mentioned lower cross tube 45 free [ vertical rotation ], the connecting linkages 53 and 53 of a Uichi Hidari pair which connect the halfway section and said rear arm 8 of this main link 52 are formed, and the lower limit of the above-mentioned damper 48 is supported pivotably by the rotation edge of the main link 52 same as the above.

A deer is carried out, and in case the rear arm 8 carries out [ a rear wheel 9 ] upper part rotation in response to the transit road surface 13 to an impact during transit of a motor bicycle 1, this link mechanism 11 increases the amount of contraction of a damper 48 to a non-line type according to this rear arm 8 carrying out upper part rotation, and, thereby, raises the flattery nature of a rear wheel 9 to the transit road surface 13.

Fig. 8 explains in more detail about the above-mentioned rear arm bracket 39 from Fig. 1.

The level difference side 54 is formed in the upper limit of wall 40a of said body 40 of a bracket, and inner plate 36 lower limit of a main frame 35 is welded to this level difference side 54. On the other hand, the plate 37 is made to extend outside the main frame 35 formed with the bracket plate 55 made from a sheet metal to the part located in the upper part by the side of the cross direction external surface of each rear arm bracket 39, and the lower limit of the above-mentioned bracket plate 55 is welded to the level difference side 56 fabricated by the upper limit of \*\* 40b outside the above-mentioned body 40 of a bracket.

In order that the body 40 of a bracket may receive the load from the rear arm 8 side directly in the above-mentioned case, although the weight of this body 40 of a bracket is heavy as described above, it has considered as the rigid high product made from casting. Lightweight-ization of the rear arm bracket 39 is attained by the comparatively light bracket plate 55 made from a sheet metal constituting, as the part which is not a direct receptacle, on the other hand, described above the load from the rear arm 8 side in the rear arm bracket 39, namely, using such a bracket plate 55. since [ and ] the bracket plate 55 is formed by extending the outside plate 37 as

described above -- a main frame 35 and the rear arm bracket 39 -- an exterior -- it is uniform.

And since each above-mentioned body 40 of a bracket is located in the inside side of the rear arm bracket 39, respectively, the clearance of the body 40 of a right-and-left bracket and 40 comrades becomes short. Therefore, the part and each above-mentioned cross tubes 44 and 45 which connect these are shortened, and it is made for the weight of a car body to become light.

Furthermore, since the inner plate 36, the joint of wall 40a, and the outside plate 37 and the joint of outer wall 40b are made to bias up and down, though each [ these ] joint has a strong fall according to the above-mentioned configuration, it is prevented that the fall of this reinforcement concentrates on one place.

In Fig. 1 and Figs. 2, 8, and 9, said lower cross tube 45 is bent so that it may become right going up gradually, the right end of this lower cross tube 45 is located more nearly up than that left end, and the lower limit of the right-hand side rear arm bracket 39 is short formed in connection with this. And it is a lower part at the right end of this lower cross tube 45, and said posterior part exhaust pipe 25 is located near [ as possible ] said link mechanism 11. That is, even when this posterior part exhaust pipe 25 is formed in the right-hand side of a car body, it is made for the right-and-left angle of bank of a motor bicycle 1 to have become as equal as possible.

Moreover, since the link mechanism 11 is located in the center of the cross direction in the above-mentioned case, even if it lowers the main link 52 to some extent, the angle of bank is not restricted. Then, while lengthening the cushioning stroke of a shock absorber 10 by lowering the location of this main link 52 as much as possible, low center-of-gravity-ization of a car body is attained.

Furthermore, the right end inferior surface of tongue 58 of the above-mentioned lower cross tube 45 is made into the inclined plane after post--so that it may agree with the inclination of said posterior part exhaust pipe 25, and the left end top face 59 of the lower cross tube 45 same as the above is made into the inclined plane which falls the back so that it may agree in the inclination when bending as said transmission chain 31 shows by the imaginary line in the 1st Fig. That is, this lower cross tube 45 is rationally fabricated so that useless space may not be generated between the posterior part exhaust pipe 25, the transmission chain 31, and the lower cross tube 45.

In Figs. 4 and 10, the sheet bracket 61 is really fabricated by the upper limit of wall 40a of each of said body 40 of a bracket from Fig. 2. Each sheet bracket 61 is projected toward the method of Gokami, the front end of the seat rail 62 which supports said sheet 32 \*\*\*\*s it in the protrusion edge of this sheet bracket 61, and the stop is

carried out to it. Moreover, reinforcing materials 63 are constructed over the base of the sheet bracket 61 same as the above, and the posterior part of the sheet rate 62, and the seat rail 62 is firmly supported with this sheet bracket 61.

Moreover, the protrusion edges of the right-and-left sheet bracket 61 are connected by the cross member 64, and the posterior part of said fuel tank 19 and the covering object 20 is supported through the shock absorbing material 65 of elasticity on this cross member 64.

Fig. 11 shows other examples. According to drawing, all the external surface sides of the rear arm bracket 39 are fabricated with the bracket plate 55 made from a sheet metal. Other configurations are the same as that of said example.

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## DESCRIPTION OF DRAWINGS

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### [Brief Description of the Drawings]

Drawing shows the example of this invention. Fig. 1 The I-I line view sectional view of Fig. 3 , Fig. 2 the whole motor bicycle side elevation and a 3rd [ \*\* ] Fig. R > Fig. The partial enlarged drawing of Fig. 2 , Fig. 4 the IV-IV line view sectional view of Fig. 1 , and Fig. 5 The V-V line view sectional view of Fig. 3 , The VII-VII line view sectional view of the 3rd drawing 3 Fig. [ Fig. / 6th / \*\* / Fig. R > / Fig. / the VI-VI line view sectional view of Fig. 3 of the same as the above, and / 7 ] of the same as the above, It is drawing equivalent to some Figs. 1 in which Fig.'s 8 showing the VIII-VIII line view sectional view of Fig. 1 , and showing [ 9 ] the example of others [ Fig. / the perspective view of a lower cross tube, and / 10 / Fig. / X-X-ray view sectional view of Fig. 3 , and / 11 ].

1 [ .. A main frame, 36 / .. An inside plate, 37 / .. An outside plate, 39 / .. A rear arm bracket, 40 / .. The body of a bracket 44 / .. An up cross tube, 45 / .. A lower cross tube, 55 / .. Bracket plate. ] .... A motor bicycle, 2 .. A car-body frame, 34 .. A steering shaft tube, 35

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(54)【発明の名称】自動二輪車の車体フレーム

1

## (57)【特許請求の範囲】

【請求項1】操向軸管から後下方に向かって延びる左右一対の主フレームを設け、この各主フレームを車幅方向で互いに対面する板金製の内、外プレートで成形する一方、この各主フレームの後端から下方に向って延びるリヤアームブラケットを設け、リヤアームを直接的に枢支するこのリヤアームブラケットのブラケット本体を铸造製とし、かつ、左右リヤアームブラケットのブラケット本体同士をクロスチューブで連結した自動二輪車の車体フレームにおいて、上記各リヤアームブラケットの車幅方向外面側の少なくとも上部に位置する箇所まで、板金製ブラケットプレートより形成した主フレームの外プレートを延長した自動二輪車の車体フレーム。

## 【発明の詳細な説明】

## (産業上の利用分野)

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この発明は、自動二輪車の車体フレームに関し、より詳しくは、主フレームを板金製とする一方、リヤアームを直接的に枢支するリヤアームブラケットのブラケット本体を铸造製としたものに関する。

## (従来の技術)

上記のような車体フレームには、例えば、特開昭60-113787号公報で示されるものがある。

この構成によれば、車体フレームは操向軸管から後下方に向かって延びる左右一対の主フレームを有しており、この各主フレームは板金製とされている。また、上記各主フレームの後端から下方に向かってリヤアームブラケットが延びている。このリヤアームブラケットの車幅方向外面側を構成するブラケット本体は負荷の大きいリヤアームを直接的に枢支する関係上、剛性の高い铸造製とされている。また、同上リヤアームブラケットの内

面側は板金製のブラケットプレートにて構成されている。更に、左右リヤアームブラケットのブラケット本体同士はクロスチューブで連結されている。

(発明が解決しようとする問題点)

ところで、自動二輪車の車体にスポーティな外観を生じさせようとするには、主フレームとリヤアームブラケットとを外観上できるだけ一様にして、これら両者間に連続性を持たせることが望ましい。

しかし、上記従来構成では、主フレームとリヤアームブラケットとは互いに材質が異なることから、これら両者の外観上の区別は明確になされる。よって、これは上記したように車体にスポーティな外観を生じさせようとする観点からすれば好ましくない。

また、上記従来構成では、各リヤアームブラケットのブラケット本体はそれぞれ車幅方向外側に位置しているため、これが内面側に位置していることに比較すれば、これら両ブラケット本体の離間距離は長くなる。よって、その分、これら左右ブラケット本体同士を連結させるクロスチューブの長さが長くなり、これに伴って車体重量も重くなるという不都合がある。

(発明の目的)

この発明は、上記のような事情に注目してなされたもので、自動二輪車の車体にスポーティな外観を生じさせるようにして見栄えの向上を図ると共に、車体を軽くすることを目的とする。

(発明の構成)

上記目的を達成するためのこの発明の特徴とするとところは、リヤアームブラケットのブラケット本体を铸造製とし、同上リヤアームブラケットの車幅方向外側の少なくとも上部に位置する箇所まで、板金製ブラケットプレートより形成した主フレームの外プレートを延長した点にある。

(作用)

上記構成による作用は次の如くである。

主フレーム35の外プレート37と、この外プレート37の延長により形成されたリヤアームブラケット39のブラケットプレート55とは共に板金製であり、このため、主フレーム35とリヤアームブラケット39とを外観上一様にすることができる、これら両者に連続性を持たせることができる。

また、各リヤアームブラケット39はその外側に板金製のブラケットプレート55が位置しており、換言すれば、ブラケット本体40は内面側に位置することとなる。よって、左右ブラケット本体40, 40同士の離間距離は短くなるため、その分、これらを連結するクロスチューブ44, 45を短くして車体の重量を軽くすることができる。

(実施例)

以下、この発明の実施例を図面により説明する。

第2図において、1は自動二輪車、2はその車体フレームで、この車体フレーム2はダイヤモンドフレームと

されている。この車体フレーム2の前端にはフロントフォーク3が操向自在に支承され、このフロントフォーク3はその下端に前輪4を支承し、上端にハンドル5を支持している。

上記車体フレーム2の後端には枢支軸7によりリヤアーム8が上下揺動自在に枢支され、このリヤアーム8はその揺動端に後輪9を支承している。また、上記車体フレーム2の後部とリヤアーム8との間には緩衝器10がリンク機構11を介して介在しており、この緩衝器10は上記車体フレーム2側に向って後輪9やリヤアーム8を介し走行路面13から伝達されようとする衝撃を緩衝する。

15はエンジンで、これは4サイクル4気筒のエンジンである。このエンジン15は締結ボルト16により上記車体フレーム2に支持されている。このエンジン15の吸気ポートには気化器17が連結され、この気化器17にはエアクリーナ18が連結されている。また、19は燃料タンクで、この燃料タンク19と上記エアクリーナ18とはカバート20により一体的に覆われている。21はキャニスターである。

20 上記エンジン15における各気筒の排気ポートにはそれぞれ前部排気管23の前端が連結され、この各前部排気管23の後端はエンジン15の下方を通って後方に延びている。また、これら各前部排気管23の後端は集合管24により集合させられており、この集合管24の内部が膨張室となっている。更に、この集合管24から斜め後上方に向って後部排気管25が延び、この後部排気管25の後端にマフラ26が連結されている。この場合、後部排気管25やマフラ26は後輪9の右側に位置している。

上記前部排気管23の後端から集合管24に至る間には排气制御装置27が介在している。この排气制御装置27はエンジン15の回転速度に応じて上記前部排気管23から集合管24に至る排気通路の開度を調整し、排気圧力波を有効に利用してエンジン15の充填効率を高めるようにしている。

上記エンジン15には駆動鎖車29が設けられており、一方、後輪9には従動鎖車30が設けられ、これら両鎖車29, 30には伝動チェーン31を巻き掛けてある。その他、32はシートである。

上記燃料タンク19から上記気化器17に燃料が供給され、エアクリーナ18とこの気化器17を通ってエンジン15に外気が吸入されると、このエンジン15の作動が可能となる。そして、その動力を伝動チェーン31等を介して後輪9に伝達されれば、自動二輪車1を走行させることができる。

第1図から第9図において、前記車体フレーム2はその前端に前記フロントフォーク3を支承する操向軸管34を有している。また、この操向軸管34から後下方に向って左右一対の主フレーム35, 35が延びている。この各主フレーム35は車幅方向で互いに対面する板金製の内、外プレート36, 37により成形されている。この場合、特に

第5図で示すようにこれら両プレート36,37は共に断面コの字状をなして互いに溶接されており、この主フレーム35は箱形断面となっている。

上記各主フレーム35の後端から下方に向ってリヤアームプラケット39が延びている。このリヤアームプラケット39は前記リヤアーム8を支持するためのもので、その各プラケット本体40はアルミニウム合金の鋳造製で、このプラケット本体40の車幅方向に対面する内壁40aと外壁40bとの間には空洞部が形成され、つまり、このプラケット本体40は中空鋳物となっている。

上記各プラケット本体40の内面には上下一対の凹所42,43が形成され、そのうち上部凹所42に上部クロスチューブ44の各端が嵌入して溶接され、下部凹所43には下部クロスチューブ45の各端が嵌入して溶接されている。即ち、この両クロスチューブ44,45が左右プラケット本体40,40同士の離間距離は短くなる。よって、その分、これらを連結する上記各クロスチューブ44,45を短くして車体の重量が軽くなるようにしてある。

更に、上記構成によれば、内プレート36と内壁40aの接合部と、外プレート37と外壁40bの接合部とは上下に偏位させているため、これら各接合部に強度の低下があるとしても、この強度の低下が一ヵ所に集中することが防止されている。

第1図から第3図において、前記緩衝器10は伸縮自在のシリンドラ状ダンバ48と、このダンバ48を伸長させる方向に付勢するスプリング49とで構成され、ダンバ48の上端は第1枢支ビン50により上部クロスチューブ44に枢支されている。

一方、前記リンク機構11は上記下部クロスチューブ45に上下回動自在に枢支される主リンク52を有し、この主リンク52の中途部と前記リヤアーム8とを連結する左右一対の連結リンク53,53が設けられ、同上主リンク52の回動端に上記ダンバ48の下端が枢支されている。

しかし、このリンク機構11は、自動二輪車1の走行中に後輪9が走行路面13から衝撃を受けてリヤアーム8が上方回動する際、このリヤアーム8が上方回動するのに従いダンバ48の縮小量を非線型に増大させ、これにより、走行路面13に対する後輪9の追従性を向上させる。

第1図から第8図により、上記リヤアームプラケット39についてより詳しく説明する。

前記プラケット本体40の内壁40aの上端には段差面54が形成されており、この段差面54に主フレーム35の内プレート36下端が溶接されている。一方、各リヤアームプラケット39の車幅方向外側の上部に位置する箇所まで、板金製プラケットプレート55により形成された主フレーム35の外プレート37が延長させられており、上記プラケットプレート55の下端は上記プラケット本体40の外壁40bの上端に成形された段差面56に溶接されている。

上記の場合、プラケット本体40はリヤアーム8側からの負荷を直接的に受けるため、前記したようにこのプラケット本体40は重量は重いが剛性の高い鋳造製である。一方、リヤアームプラケット39においてリヤアーム

8側からの負荷を直接受けない部分は上記したように比較的軽い板金製のプラケットプレート55により構成しており、即ち、このようなプラケットプレート55を用いることによりリヤアームプラケット39の軽量化が図られている。そして、プラケットプレート55は上記したように外プレート37を延長することにより形成されているため、主フレーム35とリヤアームプラケット39とは外観上一様となっている。

しかも、上記各プラケット本体40はそれぞれリヤアームプラケット39の内面側に位置しているため、左右プラケット本体40,40同士の離間距離は短くなる。よって、その分、これらを連結する上記各クロスチューブ44,45を短くして車体の重量が軽くなるようにしてある。

更に、上記構成によれば、内プレート36と内壁40aの接合部と、外プレート37と外壁40bの接合部とは上下に偏位させているため、これら各接合部に強度の低下があるとしても、この強度の低下が一ヵ所に集中することが防止されている。

第1図、第2図、第8図、および第9図において、前記下部クロスチューブ45は段階的に右上りとなるように折り曲げられており、この下部クロスチューブ45の右端はその左端よりも上方に位置し、また、これに伴って右側のリヤアームプラケット39の下端は短く形成されている。そして、この下部クロスチューブ45の右端の下方で、かつ、前記リンク機構11のできるだけ近傍に前記後部排気管25が位置している。つまり、この後部排気管25を車体の右側に設けた場合でも、自動二輪車1の左右バンク角ができるだけ均等となるようにしてある。

また、上記の場合、リンク機構11は車幅方向の中央に位置しているため、その主リンク52はある程度下げてもバンク角が制限されることはない。そこで、この主リンク52の位置をできるだけ下げるにより、緩衝器10のクッションストロークを長くすると共に、車体の低重心化を図っている。

更に、上記下部クロスチューブ45の右端下面58は前記後部排気管25の傾斜と合致するように後上りの傾斜面としてあり、また、同上下部クロスチューブ45の左端上面59は前記伝動チェーン31が第1図中仮想線で示すように撓んだときの傾斜に合致するよう後下がりの傾斜面としてある。即ち、後部排気管25や伝動チェーン31と、下部クロスチューブ45との間に無駄な空間が生じないようにこの下部クロスチューブ45が合理的に成形されている。

第2図から第4図、および第10図において、前記各プラケット本体40の内壁40aの上端にはシートプラケット61が一体成形されている。各シートプラケット61は後上方に向って突出しており、このシートプラケット61の突出端には前記シート32を支持するシートレール62の前端がねじ止めされている。また、同上シートプラケット61の基部と、シートレール62の後部には補強材63が架設され、シートレール62がこのシートプラケット61により強

固に支持されている。

また、左右シートプラケット61の突出端同士はクロスメンバ64で連結されており、このクロスメンバ64上に弹性の緩衝材65を介して前記燃料タンク19およびカバー体20の後部が支持されている。

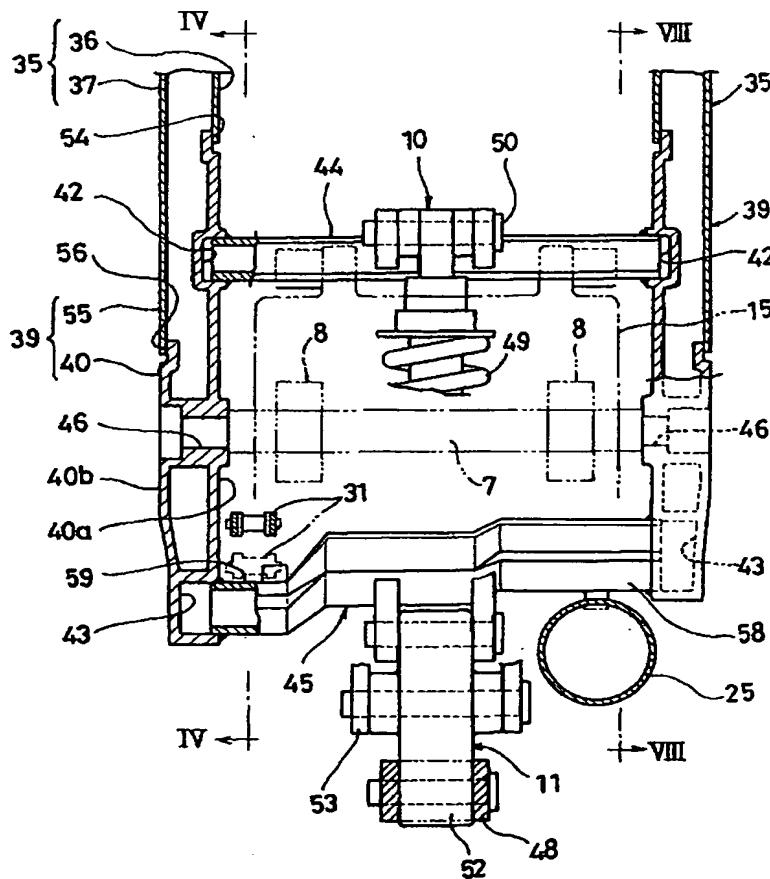
第11図は他の実施例を示している。図によれば、リヤアームブラケット39の外面側はすべて板金製のブラケットプレート55により成形されている。他の構成は前記実施例と同様である。

### （発明の効果）

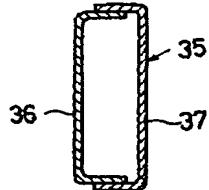
この発明によれば、リヤアームブラケットの外面側の少なくとも上部に位置する箇所まで、板金製ブラケットプレートより形成した主フレームの外プレートを延長したため、主フレームとリヤアームブラケットとを外観上できるだけ一様とすることができる。つまり、これら両者間に連続性を持たせて自動二輪車の車体にスポーティな外観を生じさせることができ、よって、見栄えの向上が達成される。

また、各リヤアームブラケットの外面側にブラケット\*

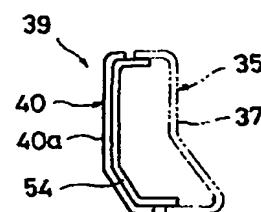
### 【第1図】



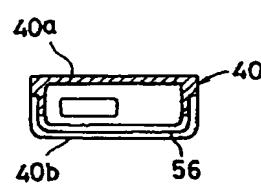
【第5図】



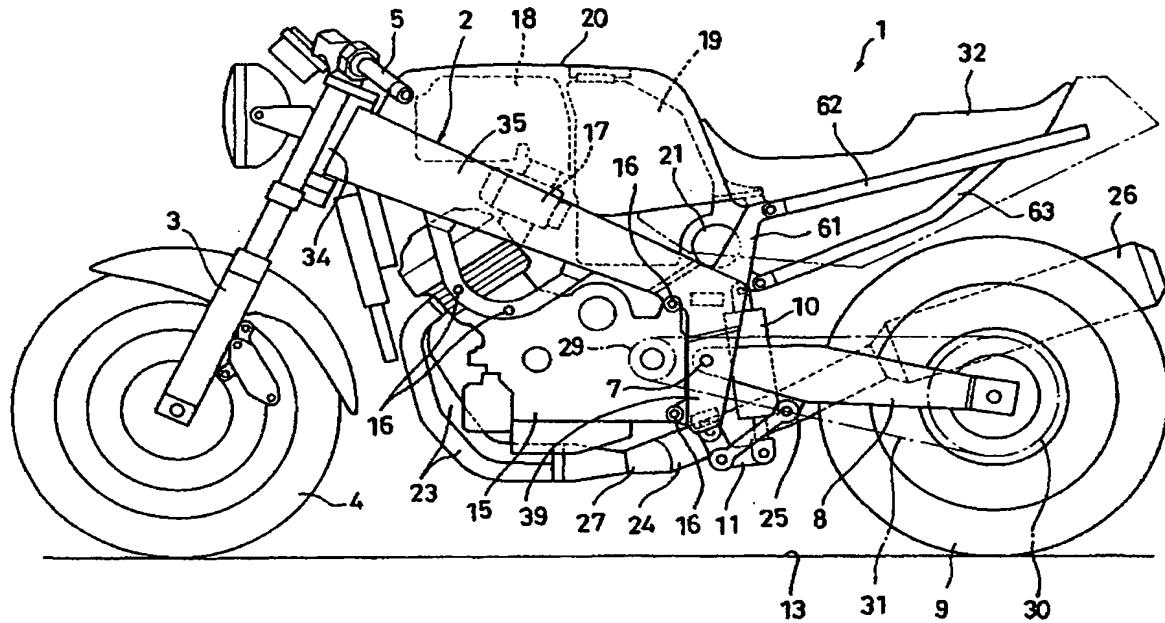
〔第6図〕



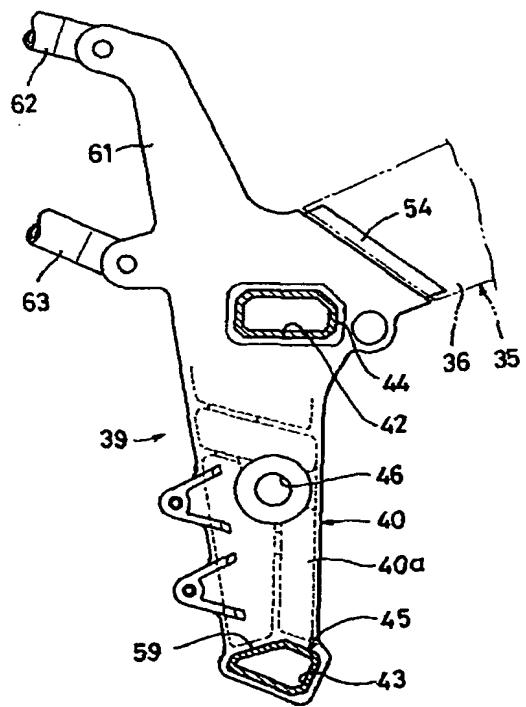
〔第7図〕



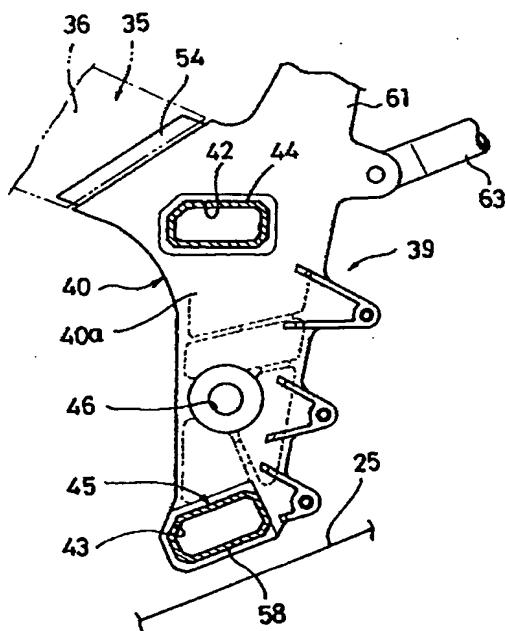
【第2図】



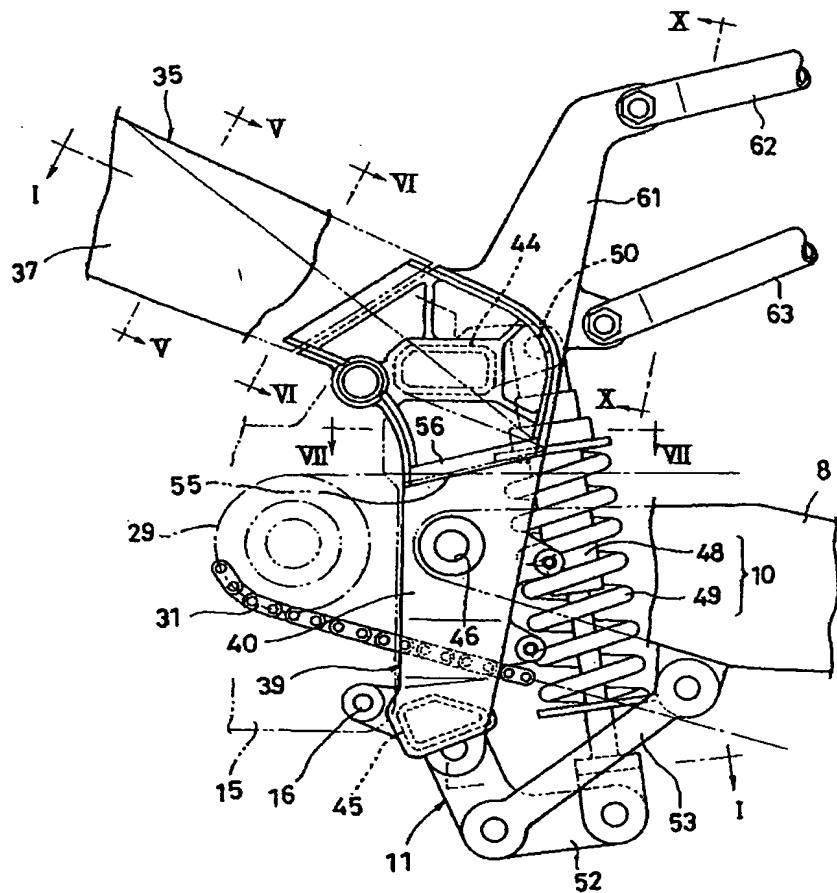
【第4図】



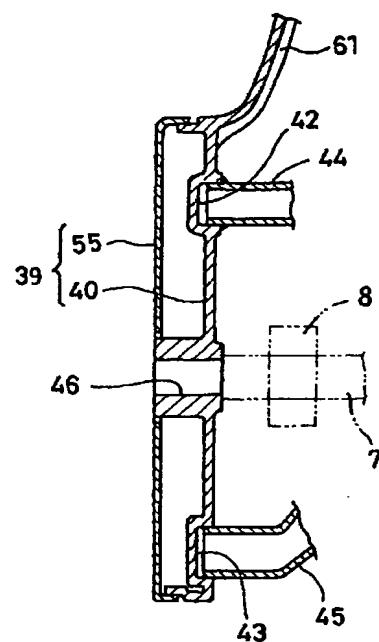
【第8図】



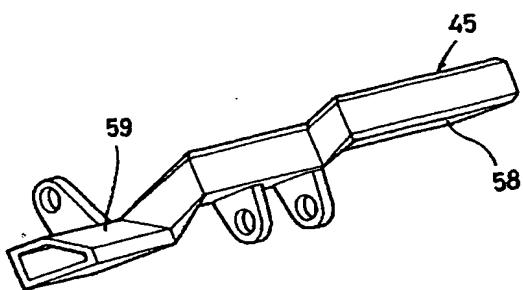
【第3図】



【第11図】



【第9図】



【第10図】

